due to lactic acid, others to hydrochloric acid, and a third party attributes it to the presence of the superphosphates. M. Schmidt, without making any direct experiments upon the subject, is inclined to think that the acidity is occasioned by a complex acid, which, under the influence of heat, is decomposed into hydrochloric acid and pepsine. Liebig, in common with some other chemists, denies the existence of free hydrochloric acid in the stomach; and he believes that, when it is obtained by the simple distillation of the gastric juice, it is formed by the reaction of the lactic and phosphoric acids, which are present in it, on the chlorides; and that they thus give rise to the production of free hydrochloric acid. LEHMANN has recently made a new examination of this subject; and he finds that, when he operates upon the stomachs of dogs, which are placed in a vacuum, in such a manner as to cause the vapours from the gastric juice to traverse a tube containing a solution of nitrate of silver, there is not any indication of free hydrochloric acid, until the concentration of the liquid has been carried so far as to permit the action of the lactic acid on the earthy chlorides. His observations, therefore, confirm the remark of Liebig, as well as the results of Bernard and Barreswill, as to the nature of the acid in the gastric juice.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1849, from *Archiv der Pharm.*

5. *On the Changes which Organic Substances suffer on their passage into the Urine.*—Messrs. WÖHLER and FRERICHS have caused a series of substances, of known composition, whose transformations, under the action of reagents, are also well defined, to pass through the organs of different animals (dogs, rabbits, guinea-pigs, &c.), under favourable circumstances for collecting the excrement and observing the action of the different substances.

Salicylous acid, given with the food in doses of ½ to 4 grammes, was detected unchanged in the urine, not having been converted into hippuric acid, as might have been expected from its isomerism with benzoic acid.

Oil of bitter almonds, free from hydrocyanic acid, was not found to exert a poisonous action, as has been stated by other experimenters. The urine, after its administration, contained hippuric acid. It is therefore converted, by the addition of 2 atoms of oxygen, into benzoic acid, which is subsequently converted into hippuric acid.

Amygdalin is not poisonous; there is, therefore, no substance in the body which can perform the function of emulsion. In two cases only, when given in large doses, it produced drowsiness, from which the animals, however, soon recovered. The breath then gave off an odour of hydrocyanic acid. In other cases these symptoms were not observed, while the urine in all cases smelt strongly of the acid, when mixed with milk of almonds. A portion, therefore, of the amygdalin may have passed off by the kidneys.

Benzoic ether was traced as hippuric acid in the urine.

Peruvian balsam also afforded hippuric acid from the cinnamic acid which it contains, and another substance, which caused the urine to assume a blood-red colour with hydrochloric acid.

Tannic acid was converted into gallic acid, pyrogallic acid, and substances bearing a resemblance to humin.

Urates and alantoin. The normal quantity of urea was increased 5-fold in the urine of a rabbit by a dose of 2½ grammes of urate of potash.

Oxalate of lime was found in considerable quantity, with an increased amount of urea in the urine both of man and the dog, after having taken urate of potash.

Allantoin, the other product of the decomposition of uric acid by peroxide of lead, was unsuccessfully sought in the urine.

Allantoin, given in considerable quantity, could not be detected in the urine, nor oxalate of ammonia, the product of its decomposition by boiling potash.

Sulphocyanide of potassium did not exhibit a poisonous action, as has been previously stated by other observers, but it appeared to diminish the activity of the spinal marrow. The sulphocyanide was always detected unchanged in the urine.

Rhodallin, or the combination of oil of mustard with ammonia, was found as sulphocyanide of ammonium in the urine. Oil of mustard is consequently decomposed in the body, in a similar manner as by soda-lime. What becomes of the allyle could not be ascertained.

Chinon was found to exert no poisonous action; but its decomposition could not be traced, nor was it found in the urine.

Aniline is not poisonous, nor was it present in the urine of the animals to which it was administered.

Carbolic acid, or hydrate of phenyle, acted as an energetic poison. It appears probable that this substance is one of the active principles in castoreum, and the study of its physiological action might possibly lead to the discovery of some substitute for that very expensive drug.

Alloxantin. This substance passed through the kidneys in considerable quantity; it did not appear to undergo any change into alloxan, but a more than normal quantity of urea was detected in the urine after its administration.

Urea was not converted into carbonate of ammonia, as was anticipated. The urine continued acid, and the urea probably passed off as such.

The authors find that arsenic acid is less poisonous than arsenious acid, and appears to undergo reduction to the state of arsenious acid in the gut. Arseniate of lime, lately discovered in many mineral waters, is also poisonous in large doses.

Pure phosphoric acid exerted no poisonous action whatever, whereas phosphorous acid caused death in every case that it was administered.—*Quarterly Journ. of Chemical Society*, Jan. 1849, from *Ann. der Chem. und Pharm.*, lxv.

6. *On the Chemical Changes of Respiration.* By MM. REGNAULT and REISET.—A new and very extended series of experiments on the subject have been instituted by MM. Regnault and Reiset, who give minute details of the several steps of the process employed by them, the precautions taken, and the kind of apparatus used. Their investigations, which are still in progress, seem to be performed with much care and exactness, and their results may probably be fully relied on. The most important of these results is, that nitrogen is invariably exhaled through the lungs, though the quantity is small, rarely exceeding $\frac{1}{100}$th of the amount of oxygen consumed. Hydrogen, and certain carburetted gases, usually present themselves in small quantity. As an illustration of the changes which Regnault and Reiset found to occur in the respired air, the following results of an experiment, in which a young dog was confined in the apparatus for 24½ hours, may be quoted:—

	Grammes.*
Oxygen consumed	182.288
Carbonic acid produced	185.961
Oxygen contained in the carbonic acid	135.244
Nitrogen disengaged	0.1820

If the quantity of oxygen consumed be represented at 100, then the results may be thus stated:—

Oxygen consumed	100
Oxygen in the carbonic acid	74.191
Oxygen otherwise disposed of	25.809
Nitrogen disengaged	0.0549
Average quantity of oxygen consumed in an hour .	7.44

Lond. Med. Gaz., Oct. 1848, from *Comptes Rendus*, 1848.

7. *Source of Sugar in the Animal Economy.*—Dr. BERNARD, from an ingenious series of experiments, an account of which we are compelled, by want of space, to defer until our next number, has come to the conclusion—that diabetic sugar is a normal ingredient in the blood and liver of animals;—that the formation of sugar takes place in the liver, independently of saccharine or feculent food; and that this formation of sugar commences before birth.—*Archives Générales de Méd.*

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* A gramme equals about 15½ grains English.